

## Preface

The CHINA-JAPAN International Conference on Ultra-Precision Machining (CJICUPM) was started in 1984, paused in 1994. With the rapid development of R&D on ultra-precision machining in Japan and China, researchers in two countries think that it is very necessary to reopen the conference. Therefore, we organize the 8th CJICUPM. The conference aims to be a bilateral forum for researchers to present their latest findings and to exchange ideas in the field of ultra-precision machining.

This book selected papers from the submissions to the International Conference on Ultra-Precision Machining (CJICUPM2008), one of the academic conferences originated by Production Engineering Institution of Chinese Mechanical Engineering Society (CMES) and National Engineering Research Center for High Efficiency Grinding, Hunan University, held in Changsha, China, from 24 - 25 November, 2008.

All the papers have gone through a peer-review process for their originality and quality. The aim of the symposium is to be a bilateral forum for researchers to present their latest findings and to exchange ideas in the field of ultra-precision machining.

During the symposium, an exhibition will be held to demonstrate some development of new equipment and tools for surface finishing, polishing and deburring.

The topics covered in this book include:

- Single-point diamond turning of optical materials or molding dies
- Single-point diamond turning of other materials
- Ultra-precision grinding of optical materials or molding dies
- Ultra-precision grinding of hard materials
- Ultra-precision polishing of optical materials or molding dies
- Ultra-precision polishing of single crystals or chemical mechanical polishing
- Ultra-precision polishing of metals or alloys
- High speed machining technology and applications
- Ion beam figuring and polishing
- Electron beam patterning and polishing
- Ultra-precision laser machining
- Ultra-precision electro discharge machining
- Ultra-precision coating
- Glass molding and plastic injection molding of optical and electric components
- Fabrication of micro electro mechanical systems (MEMS)
- Ultra-precision machine tools
- New Ultra-precision machine and its machine elements
- Ultra-precision positioning and control
- Ultra-precision shape or surface roughness measurement
- New tools or new application of tools
- Other precision machining technology
- Advanced manufacturing and design methods

We hope that this book provides a valuable and fruitful reference for researchers in the field of ultra-precision machining process who wish to further understand the

underlying mechanisms and create new and practical design technologies, systems and processes. It should also be particularly useful for practicing engineers in ultra-precision machining who are responsible for the efficient, precision and effective operations. We would like to thank all the authors for their contributions to the book and the referees for their constructive comments on the papers.

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